

Amendment to the Claims

Please amend Claims 49-62 to read as follows.

Please add Claims 68-86 to read as follows.

1. (Withdrawn) A database interface for interfacing to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the interface comprising:

receiving means for receiving an input textual query;

comparing means for comparing said input query with said captions for said sets of non-text data to determine the similarities between said input query and said captions and between said captions; and

display control means for controlling display means to display representations of a plurality of sets of non-text data which have captions which are the most similar to said input query, and for controlling said display means to display said representations separated in accordance with the similarities between their respective captions.

2. (Withdrawn) A database interface according to claim 1 wherein each said descriptive text caption is text in a natural language, said input means is adapted to receive a natural language query, and said comparing means is adapted to perform a natural language comparison between said input query and said captions.

3. (Withdrawn) A database interface according to claim 2 wherein said comparing means is adapted to compare the meaning of said input query with the meaning of said caption.

4. (Withdrawn) A database interface according to claim 1, wherein said display control means is adapted to select the representation of the set of non-text data having the most similar said caption to said query as a focal representation, and to control said display means to display said focal representation at a central position and to display the representations of the rest of said plurality of sets of non-text data around said focal representation at distances dependent upon the determined similarities.

5. (Withdrawn) A database interface according to claim 1, wherein said non-text data comprises image data and said display control means is adapted to control said display means to display thumbnail images of said sets of image data as said representations.

6. (Withdrawn) A database interface according to claim 1, including means for receiving a selection signal following the selection of a representation as a new query, said display control means being responsible to said selection signal to control said display means to display the selected representation at a central position and to display the representations for the sets of non-text data which have captions most similar to the caption of the selected representation around the selected representation at distances in accordance with the similarities.

7. (Withdrawn) A database interface according to claim 6 wherein said database includes a set of similarity measures stored for each set of non-text data, and said display control means is adapted to receive said sets of similarity measures from said database for a selected representation.

8. (Withdrawn) A database interface apparatus for interfacing a user interface to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the apparatus comprising:

means for receiving an input textual query from said user interface;

means for comparing said input textual query with said captions for said sets of non-text data to determine the similarities between said input query and said captions and between said captions; and

means for outputting information identifying a plurality of sets of non-text data having captions most similar to said query to said user interface for the display of representations of said sets of non-text data separated in accordance with the similarities.

9. (Withdrawn) A user interface for use with said database interface apparatus of claim 8 and for displaying a plurality of representations of sets of non-text data, the user interface comprising:

input means for inputting a text query;

means for sending said input query to said database interface apparatus;

means for receiving information identifying a plurality of sets of non-text data having the most similar captions to said query, and similarity values;

means for retrieving said sets of non-text data from said database; and

display means for displaying representations of said sets of non-text data separated in accordance with the similarity values.

10. (Withdrawn) A database interface for interfacing to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the interface comprising:

receiving means for receiving an input textual query;

comparing means for comparing said input query with said captions for said sets of non-text data to determine the similarities between said input query and said captions;

selecting means for selecting the determined most similar set of non-text data;

and

display control means for controlling display means to display a representation of the selected set of non-text data and representations of a plurality of sets of non-text data having the most similar captions to the caption of said selected set of non-text data separated in accordance with the similarities between their respective captions.

11. (Withdrawn) A database interface according to claim 10 wherein said database stores the similarities between the caption for each set of non-text data and the captions of a plurality of the sets of non-text data which are most similar and identities said plurality of sets of non-text data, said display control means being adapted to retrieve said selected set of non-text data and said similarities and identities for said selected set of non-

text data, and to retrieve said plurality of sets of non-text data in accordance with said retrieved identities.

12. (Withdrawn) A database interface according to claim 10, wherein each said descriptive text caption is text in a natural language, said input means is adapted to receive a natural language query, and said comparing means is adapted to perform a natural language comparison between said input query and said captions.

13. (Withdrawn) A database interface according to claim 12, wherein said comparing means is adapted to compare the meaning of said input query with the meaning of said caption.

14. (Withdrawn) A database interface according to claim 10, wherein said display control means is adapted to control said display means to display said representation of said selected set of non-text data as a focal representation at a central position and to display the representations of said plurality of sets of non-text data around said focal representation.

15. (Withdrawn) A database interface according to claim 10, wherein said non-text data comprises image data and said display control means is adapted to control said display means to display thumbnail images of said sets of image data as said representations.

16. (Withdrawn) A database interface according to any one of claims 10 to 15 including means for receiving a selection signal following the selection of a representation as a new query, said display control means being responsive to said selection signal to control said display means to display the selected representation at a central position and to display the representations for the sets of non-text data which have captions most similar to the caption of the selected representation around the selected representation at distances in accordance with the similarities.

17. (Withdrawn) A database interface according to claim 16 wherein said database includes a set of similarity measures stored for each set of non-text data, and said display control means is adapted to receive said set of similarity measures from said database for a selected representation.

18. (Withdrawn) A database interface apparatus for interfacing a user interface to a database of a plurality of sets of non-text data, each set of non-text data having associated therewith, a descriptive text caption and information identifying sets of non-text data having the most similar captions and giving the similarities;

the apparatus comprising:

means for receiving an input textual query from said user interface;

means for comparing said input query with said captions for said sets of non-text data to determine the similarities therebetween;

means for outputting information identifying a set of non-text data having a caption most similar to said query to said user interface; and

means causing said information for said set of non-text data to be sent from said database to said user interface for the display of representations of the identified sets of non-text data separated in accordance with the similarities.

19. (Withdrawn) A user interface for use with said database interface apparatus of claim 18 and for displaying a plurality of representations of sets of non-text data, the user interface comprising:

input means for inputting a text query;

means for sending said input query to said database interface apparatus;

means for receiving information identifying sets of non-text data and comparative similarity values;

means for retrieving said sets of non-text data from said database; and

display means for displaying representations of said sets of non-text data separated in accordance with the similarity values.

20. (Withdrawn) A database interface method for interfacing to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the method comprising:

receiving an input textual query;

comparing said input query with said captions for said sets of non-text data to determine the similarities between said input query and said captions, and between said captions; and

control display means to display representations of a plurality of sets of non-text data which have captions which are the most similar to said input query separated in accordance with the similarities between their respective captions.

21. (Withdrawn) A database interface method according to claim 20, wherein each said descriptive text caption is text in a natural language, said query is input as a natural language query, and the comparing step performs a natural language comparison between said input query and said captions.

22. (Withdrawn) A database interface method according to claim 21, wherein said comparing step compares the meaning of said input query with the meaning of said captions.

23. (Withdrawn) A database interface method according to claim 20, including selecting the representation of the set of non-text data having the most similar said caption to said query as a focal representation, and controlling said display means to display said focal representation at a central position and to display the representations of the rest of said plurality of sets of non-text data around said focal representation at distances dependent upon the determined similarities.

24. (Withdrawn) A database interface method according to claim 20, wherein said non-text data comprises image data, and said display means is controlled to display thumbnail images of said sets of image data as said representations.

25. (Withdrawn) A database interface method according to claim 20, including receiving a selection signal following the selection of a representation as a new query, responding to said selection signal by controlling said display means to display the selected representation at a central position and to display representations of the non-text data which have captions most similar to the caption of the selected representation around the selected representation at distances in accordance with the similarities.

26. (Withdrawn) A database interface method according to claim 25, wherein said database includes a set of similarity measures stored for each set of non-text data, and said set of similarity measures is received from said database for a selected representation.

27. (Withdrawn) A database interface method for interfacing a user interface to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the method comprising:

receiving an input text query from said user interface;

comparing said input text query with said captions for said sets of non-text data to determine the similarities between said input query and the said captions, and between said captions; and

outputting information identifying a plurality of sets of non-text data having captions most similar to said query to said user interface for the display of representations of said sets of non-text data separated in accordance with the similarities.

28. (Withdrawn) A method of operating a user interface for use with database interface apparatus operating in accordance with the database interface method of claim 27 and for displaying a plurality of representations of sets of non-text data, the method comprising:

receiving a text query;

sending said query to said database interface apparatus;

receiving information identifying a plurality of sets of non-text data having the most similar captions to said query and similarity values;

retrieving said sets of non-text data from said database; and

displaying representations of said sets of non-text data separated in accordance with the similarity values.

29. (Withdrawn) A database interface method of interfacing to a database of a plurality of sets of non-text data, each set of non-text data having a descriptive text caption associated therewith, the method comprising:

receiving an input text query;

comparing said input query with said captions for said sets of non-text data to determine the similarities between said input query and said captions;

selecting the determined most similar set of non-text data; and

controlling display means to display a representation of the selected set of non-text data and representations of a plurality of sets of non-text data having the most similar captions to the caption of said selected set of non-text data separated in accordance with the similarities between their respective captions.

30. (Withdrawn) A database interface method according to claim 29, wherein said database stores the similarities between the caption for each set of non-text data and the captions of a plurality of the sets of non-text data which are most similar and identities of said plurality of sets of non-text data, the method including retrieving said selected set of non-text data, and said similarities and said identities for said selected set of non-text data, and retrieving said plurality of sets of non-text data in accordance with said retrieved identities.

31. (Withdrawn) A database interface method according to claim 30 wherein each said descriptive text caption is text in a natural language, said query is received as a natural language query, and the comparing step performs a natural language comparison between said input query and said captions.

32. (Withdrawn) A database interface method according to claim 31, wherein the comparing step compares the meaning of said input query with the meaning of said captions.

33. (Withdrawn) A database interface method according to claim 29, wherein said display means is controlled to display said representation of said selected set of non-text data as a focal representation at a central position and to display the representations of said plurality of sets of non-text data around said focal representation.

34. (Withdrawn) A database interface method according to claim 29, wherein said non-text data comprises image data and said display means is controlled to display thumbnail images of said sets of image data as said representations.

35. (Withdrawn) A database interface method according to claim 29, including receiving a selection signal following the selection of a representation as a new query, responding to said selection signal to control said display means to display the selected representation at the central position and to display the representations for the normal text data which have captions most similar to the caption of the selected representation around the selected representation at distances in accordance with the similarities.

36. (Withdrawn) A database interface method according to claim 35, wherein said database includes a set of similarity measures stored for each set of non-text data, the method including receiving said set of similarity measures from said database for a selected representation.

37. (Withdrawn) A database interface method of interfacing a user interface to a database of a plurality of sets of non-text data, each set of non-text data having associated therewith a descriptive text caption, and information identifying sets of non-text data having the most similar captions and giving the similarities; the method comprising:

receiving an input text query from said user interface;

comparing said input query with said captions for said sets of non-text data to determine the similarities therebetween; and

outputting information identifying a set of non-text data having a caption most similar to said query to said user interface; and

causing said information for said set of non-text data to be sent from said database to said user interface for the display of representations of the identified sets of non-text data separated in accordance with the similarities.

38. (Withdrawn) A method of providing a user interface for use with database interface apparatus operating in accordance with the method of claim 37 and for displaying a plurality of representations of sets of non-text data, the method comprising:

receiving a text query;

sending said query to said database interface apparatus;

receiving information identifying sets of non-text data and comparative similarity values;

retrieving said sets of non-text data from said database; and

displaying representations of said sets of non-text data separated in accordance with the similarity values.

39. (Withdrawn) Data accessing apparatus for accessing each set of data having similarity data giving the similarity of the data, other sets of data, and the identity of the other sets of data, the apparatus comprising;

receiving means for receiving a query;

comparing means for comparing the query with said sets of data or meta data for said sets of data to determine at least the most similar set of data;

display control means for controlling display means to display a representation for the most similar set of data and representations for other similar sets of data arranged in accordance with their similarity;

selection means for allowing a selection of representation; and

retrieval means for retrieving said similarity data for the set of data corresponding to selected representation;

wherein said display control means is adapted to control said display means to display the selected representation and representations for the other sets of data identified in said similarity data arranged in accordance with their similarities.

40. (Withdrawn) Data accessing apparatus according to claim 39 wherein said comparing means is adapted to determine the most similar set of data; said retrieval means is adapted to retrieve said similarity data for said most similar set of data; and said display control means is adapted to control said display means to display a representation of said most similar set of data and representations of other sets of data identified in said similarity data arranged in accordance with their similarities.

41. (Withdrawn) Data accessing apparatus according to claim 39 wherein said comparing means is adapted to determine a plurality of the most similar sets of data to said query and their similarity values; and said display control means is adapted to control

said display means to display representations of said most similar sets of data arranged in accordance with their similarity values.

42. (Withdrawn) Data accessing apparatus according to claim 39, wherein said meta data comprises text, said receiving means is adapted to receive a text query, and said comparing means is adapted to compare the text query with text meta data for said sets of data.

43. (Withdrawn) Data accessing apparatus according to claim 39, wherein said display control means is adapted to control said display means to display the representation for the most similar set of data centrally with the rest of the representations there around.

44. (Withdrawn) A data accessing method of accessing sets of data, each set of data having similarity data giving the similarities of the data to other sets of data and the identity of the other sets of data, the method comprising:

receiving a query;

comparing the query with said sets of data or meta data for said sets of data to determine at least the most similar set of data;

controlling display means to display a representation of the most similar set of data and representations for other similar sets of data arranged in accordance with their similarity;

allowing a selection of a representation;

retrieving said similarity data for the set of data corresponding to the selected representation; and

controlling said display means to display the selected representation and representations for the other sets of data identified in said similarity data arranged in accordance with their similarities.

45. (Withdrawn) A data accessing method according to claim 44, wherein the comparing step determines the most similar set of data; the retrieval step retrieves said similarity data for said most similar set of data; and the display means is controlled to display a representation of said most similar set of data and representations of other sets of data identified in said similarity data arranged in accordance with their similarities.

46. (Withdrawn) A data accessing method according to claim 44 wherein the comparing step determines a plurality of the most similar sets of data into said query and their similarity values; and the display means is controlled to display representations of said most similar sets of data arranged in accordance with their similarity values.

47. (Withdrawn) A data accessing method according to claim 44, wherein said meta data comprises text, a text query is received, and the text query is compared with text meta data for said sets of data.

48. (Withdrawn) A data accessing method according to claim 44, wherein said display means is controlled to display the representation for the most similar set of data centrally with the rest of the representations there around.

49. (Currently Amended) Data display apparatus for displaying the relationships between sets of data, ~~the~~ said apparatus comprising:

data receiving means for receiving sets of data and similarity values for ~~the~~ similarity between the sets of data; and

a^2 display control means for controlling display means to [→]~~display~~ representations for ~~said the~~ sets of data separated in accordance with ~~said the~~ similarity values and to display in a first style links between said representations which correspond to sets of data having a strong similarity value, and in a second style links between said representation which correspond to sets of data having a weak similarity value links between the } *surfing?*
representations in accordance with the similarity values.

50. (Currently Amended) Data display apparatus according to claim 49, wherein said display control means is adapted to control ~~said the~~ display means to display ~~said the~~ representations as images of ~~said the~~ sets of data.

51. (Currently Amended) Data display apparatus according to claim 49, wherein said display control means is adapted to control ~~said the~~ display means to display a ~~said~~ link in ~~said a~~ first style if the similarity value associated with the link is above the ~~means~~ mean of the similarity values by a predetermined amount and to display a ~~said~~ link

in ~~said~~ a second style if the similarity value associated with the link is below the mean of the similarity values by a predetermined amount.

52. (Currently Amended) ~~The~~ A data display method of displaying the relationship between sets of data, ~~the~~ said method comprising the steps of:

receiving sets of data and similarity values for ~~the~~ similarity between the sets of data;

controlling display means to display representations for ~~said~~ the sets of data separated in accordance with ~~said~~ the similarity values; and

displaying ~~in a first style links between said representations which correspond to sets of data having a strong similarity value and in a second style links between said representations which correspond to sets of data having a weak similarity value~~ links between the representations in accordance with the similarity values.

53. (Currently Amended) A data display method according to claim 52, wherein ~~said~~ the display means is controlled to display ~~said~~ the representations as images of ~~said~~ the sets of data.

54. (Currently Amended) A data display method according to claim 52, wherein ~~said~~ the display means is controlled to display a ~~said~~ link in ~~said~~ a first style if the similarity value associated with the link is above the mean of the similarity values by a predetermined amount and to display a ~~said~~ link in ~~said~~ a second style if the similarity

value associated with the link is below the mean of the similarity values by a predetermined amount.

55. (Currently Amended) Data display apparatus for displaying the relationships between sets of data, ~~the~~ said apparatus comprising:

data receiving means for receiving sets of data and similarity values for ~~the~~ similarity between the sets of data;

arrangement calculation means for calculating ~~the optimum~~ an arrangement of representations for ~~said the~~ sets of data on display means ~~so that, in which arrangement~~ said the representations are spaced according to ~~said the~~ similarity values;

display control means for controlling ~~said the~~ display means to display ~~said the arrangement of the~~ representations ~~arranged in accordance with said calculation;~~ and user selection means for allowing a user to select and move a one of ~~said the~~ representations; representations.

wherein said arrangement calculation means is operable to recalculate the ~~optimum~~ arrangement of ~~said the~~ representations following ~~the~~ movement of a the one of ~~said the~~ representations.

56. (Currently Amended) Data display apparatus according to claim 55, wherein said arrangement calculation means is adapted to carry out iterative calculations of ~~the~~ separations of ~~said the~~ representations from starting separations to target separations.

57. (Currently Amended) Data display apparatus according to claim 56, wherein said display control means is adapted to control ~~said~~ the display means to display ~~said~~ the representations at time sequential stages of ~~said~~ the iterative calculations.

58. (Currently Amended) A data display method of displaying the relationships between sets of data, ~~the apparatus~~ said method comprising the steps of:

receiving sets of data and similarity values for ~~the~~ similarity between the sets of data;

calculating ~~the optimum~~ an arrangement of representations for ~~said~~ the sets of data on display means ~~so that, in which arrangement~~ said the representations are spaced according to ~~said~~ the similarity values;

controlling ~~said~~ the display means to display ~~said~~ the arrangement of representations ~~arranged in accordance with said calculations;~~

allowing ~~the~~ a user to select and move a one of ~~said representation~~ the representations; and

recalculating the ~~optimum~~ arrangement of ~~said~~ the representations following the movement of a the one of the ~~said representation~~ representations.

59. (Currently Amended) A data display method according to claim 58, wherein ~~the calculation of the optimum arrangement of the representations~~ said calculating step is carried out as iterative calculations of ~~the~~ separations of ~~said~~ the representations from starting separations to target separations.

60. (Currently Amended) A data display method according to claim 59, wherein ~~said~~ the display means is controlled to display ~~said~~ the representations at time sequential stages of ~~said~~ the iterative calculations.

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61. (Currently Amended) A data display apparatus for displaying the relationships between sets of data, ~~the~~ said apparatus comprising:

data receiving means for receiving sets of data and similarity values for ~~the~~ similarities between the sets of data;

arrangement calculation means for iteratively calculating ~~the optimum~~ separations of displayed representations for ~~said~~ the sets of data from starting separations to target separations corresponding to ~~said~~ the similarity values; and

display control means for controlling display means to display ~~said~~ the representations arranged ~~in accordance with by said iterative calculations~~ arrangement calculation means at time sequential stages of ~~said iterative calculations~~ while said arrangement calculation means is iteratively calculating the separations of the representations.

62. (Currently Amended) A data display method of displaying the relationships between sets of data, ~~the~~ said method comprising:

receiving sets of data and similarity values for similarities between the sets of data;

iteratively calculating ~~the optimum~~ separations of displayed representations for ~~said~~ the sets of data from starting separations to target separations corresponding to ~~said~~ the similarity values; and

controlling display means to display ~~said~~ the representations arranged in accordance with ~~said iterative calculations~~ said calculating step at time sequential stages of ~~said iterative calculations~~ calculating step.

63. (Withdrawn) A storage medium storing instructions for controlling a processing to carry out the method of any one of claims 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 44, 45, 46, 47, 48, 52, 53, 54, 58, 59, 60 and 62.

64. (Withdrawn) A signal carrying instructions for controlling a processor to carry out the method of any one of claims 20 to 38, 44 to 48, 52, to 54 and 58 to 62.

65. (Withdrawn) A computer program for implementation by a computer to carry out the method of any one of claims 20 to 38, 44 to 48, 52, to 54 and 58 to 62.

66. (Withdrawn) A method comprising the combination of any one of claims 20 to 38, 44 to 48, 52, to 54 and 58 to 62.

67. (Withdrawn) Apparatus comprising the combination of any one of claims 1 to 19, 39 to 43, 49 to 51, 55 to 57 and 61.

68. (New) Apparatus according to any one of claims 49, 55, and 61, further comprising:

query receiving means for receiving an input query; and

determining means for determining similarity values representing similarities between the input query and data representing the sets of data,

wherein said data receiving means is arranged to receive the sets of data and the similarity values from said determining means.

69. (New) Apparatus according to claim 68, wherein said determining means comprises accessing means for accessing a database and comparing means for comparing the input query with the data representing the sets of data to determine the similarity values.

70. (New) Apparatus according to claim 68, wherein said query receiving means is arranged to receive a textual input query and said determining means is arranged to determine similarities between the textual input query and descriptive caption data representing the sets of data.

71. (New) Apparatus according to claim 68, wherein said determining means comprises accessing means for accessing a database and comparing means for performing a natural language comparison between the input query and descriptive caption data representing the sets of data to determine the similarity values.

72. (New) Apparatus according to claim 71, wherein said comparing means is adapted to compare a meaning of the input query with a meaning of the caption data.

73. (New) Apparatus according to claim 68, wherein said display control means is adapted to select the representation of the set of data having the similarity values representing the most similarity to the input query as a focal representation, and to control the display means to display the representations of the rest of the sets of data around the focal representation at distances dependent upon the determined similarity values.

74. (New) Apparatus according to any one of claims 49, 55, and 61, wherein said display control means is adapted to control the display means to display thumbnail images of the sets of data as the representations.

75. (New) Apparatus according to claim 68, further comprising means for receiving a selection signal following selection of one of the representations as a new query, said display control means being responsive to the selection signal to control the display means to display the selected representation at a central position and to display the representations for the sets of data most similar to the selected representation around the selected representation at distances in accordance with the similarity values.

76. (New) A method according to any one of claims 52, 58, and 62, further comprising the steps of:

receiving an input query; and

determining similarity values representing similarities between the input query and data representing the sets of data,

wherein, in said data receiving step, the sets of data and the similarity values determined in said determining step are received.

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77. (New) A method according to claim 76, wherein said determining step comprises the steps of accessing a database and comparing the input query with the data representing the sets of data to determine the similarity values.

78. (New) A method according to claim 76, wherein a textual input query is received in said input query receiving step, and similarities between the textual input query and descriptive caption data representing the sets of data are determined in said determining step.

79. (New) A method according to claim 76, wherein said determining step comprises the steps of accessing a database and performing a natural language comparison between the input query and descriptive caption data representing the sets of data to determine the similarity values.

80. (New) A method according to claim 79, wherein a meaning of the input query is compared with a meaning of the caption data in said performing step.

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81. (New) A method according to claim 76, wherein in said display controlling step, the representation of the set of data having the similarity values representing the most similarity to the input query is selected as a focal representation, and the display means is controlled to display the representations of the rest of the sets of data around the focal representation at distances dependent upon the determined similarity values.

82. (New) A method according to any one of claims 52, 58, and 62, wherein in said display controlling step, the display means is controlled to display thumbnail images of the sets of data as the representations.

83. (New) A method according to claim 76, further comprising the steps of receiving a selection signal following selection of one of the representations as a new query, and, in response to the selection signal, controlling the display means to display the selected representation at a central position and to display the representations for the sets of data most similar to the selected representation around the selected representation at distances in accordance with the similarity values.

84. (New) Data display apparatus for displaying the relationships between sets of data, said apparatus comprising:

a data receiver operable to receive sets of data and similarity values for similarity between the sets of data; and

a display controller operable to control a display to display representations for the sets of data separated in accordance with the similarity-values and to display in a first style links between representations which correspond to sets of data having a strong similarity value, and in a second style links between representations which correspond to sets of data having a weak similarity value.

85. (New) Data display apparatus for displaying the relationships between sets of data, said apparatus comprising:

a data receiver operable to receive sets of data and similarity values for similarities between the sets of data;

an arrangement calculator operable to calculate an arrangement of representations for the sets of data on a display, in which arrangement the representations are spaced according to the similarity values; and

a display controller operable to control the display to display the arrangement of the representations,

wherein said arrangement calculator is operable to recalculate the arrangement of the representations following movement of one of the representations by a user. (look up)

86. (New) A data display apparatus for displaying the relationships between sets of data, the apparatus comprising:

a data receiver operable to receive sets of data and similarity values for similarities between the sets of data;

an arrangement calculator operable to iteratively calculate separations of displayed representations for the sets of data from starting separations to target separations corresponding to the similarity values; and

a display controller operable to control a display to display the representations arranged by said arrangement calculator at time sequential stages while said arrangement calculator is iteratively calculating the separations of the representations.

87. (New) A storage medium storing instructions for controlling a processor to carry out a method according to any one of claims 52, 58, and 62.

88. (New) A signal carrying instructions for controlling a processor to carry out a method according to any one of claims 52, 58, and 62.
